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Videogame Addiction and its Treatment

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Abstract For many, the concept of videogame addiction seems far-fetched, particularly if their concepts and definitions of addiction involve the taking of drugs. This paper overviews the small, but growing area of videogame addiction and then examines the treatment options available for those affected by excessive videogame playing. An overview of the available empirical literature appears to indicate that adverse effects are likely to affect only a relatively small subgroup of players and that frequent players are the most at-risk for developing problems. Worldwide, there are relatively few practitioners that specialise in the treatment of videogame addiction and this may be because there are so few players who are genuinely addicted to playing videogames. However, the Internet may be facilitating excessive online game playing as evidenced by the increasing number of specialist addiction treatment clinics for online videogame addiction. This paper overviews the various approaches that have been used as an intervention in treating videogame addicts, including online support groups, 12-step programmes, behavioural and cognitive-behavioural therapies, and motivational interviewing.

Keywords Videogames · Addiction · Videogame addiction · Internet addiction · Treatment

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Videogame Addiction: A Brief Overview

There are many benefits that videogame players get from engaging in their chosen activity. These can be educational (e.g. Griffiths 2002a; deFreitas and Griffiths 2007), social (e.g. Cole and Griffiths 2007; Hussain and Griffiths 2008) and/or therapeutic (e.g. Griffiths 2005a, b). However, there is evidence that when taken to excess, videogame playing can be addictive (e.g. Griffiths 2000, 2008), especially online videogame playing where the game never pauses or ends and has the potential to be a never-ending activity (e.g. Ng and Weimer-Hastings 2005; Chappell et al. 2006; Grüsser et al. 2007; Hussain and Griffiths 2009).

For many, the concept of videogame addiction seems far-fetched, particularly if their concepts and definitions of addiction involve the taking of drugs. Despite the predominance of drug-based definitions of addiction, there is now a growing movement which views a number of behaviours as potentially addictive, including many behaviours that do not involve the ingestion of a psychoactive drug (e.g. gambling, computer game playing, exercise, sex, Internet use) (Griffiths 2005c). Such diversity has led to new, all encompassing definitions of what constitutes addictive behaviour.

Excessive activity and addictive activity are two very different things. Healthy excessive enthusiasms add to life, whereas addictions take away from it (Griffiths 2005c). Although all addictive behaviours have idiosyncratic differences, addictions commonly have more similarities. It has been argued that videogames and slot machines have more inherent similarities than differences, (i.e. conceptually, psychologically, behaviourally, etc.), and that videogame playing can be described as a non-financial form of gambling, playing for points instead of money (Griffiths 1991, 2005d). This is one of the reasons why so many researchers

investigating 'videogame addiction' use screening instruments adapted from the gambling literature.

To date, there has been very little research directly investigating videogame addiction. Furthermore, almost all of it has concentrated on adolescents (e.g. Griffiths and Hunt 1995, 1998; Fisher 1994; Phillips et al. 1995; Griffiths 1997; Tejeiro-Dalguero and Moran 2002) or young adults (e.g. Shotton 1989). There are additional reports of behavioural signs of videogame dependency among adolescents, including stealing money to play arcade games or to buy new game cartridges (Klein 1984; Keepers 1990; Griffiths and Hunt 1995, 1998), truanting from school to play (Keepers 1990; Griffiths and Hunt 1998), not doing homework/getting bad marks at school (Griffiths and Hunt 1998; Phillips et al. 1995), sacrificing social activities to play (Egli and Meyers 1984; Griffiths and Hunt 1998), irritability and annoyance if unable to play (Griffiths and Hunt 1998), and playing longer than intended/time loss (Egli and Meyers 1984; Griffiths and Hunt 1998; Wood and Griffiths 2007; Wood et al. 2007). Signs of dependency suggest that a minority of people, particularly adolescents, are addicted to videogame playing. However, the prevalence of video game addiction and the mechanism by which people become addicted is still of great controversy. The need to establish the incidence and prevalence of clinically significant problems associated with videogame addiction is of paramount importance. A clearer operational definition of video game addiction is required if this is to be achieved.

It has been argued the only way of determining whether non-chemical, (i.e. behavioural) addictions are "addictive" is to compare them against clinical criteria for other established drug-ingested addictions. However, most researchers have failed to do this. The main problems with frequently used videogame addiction criteria is that the measures used (1) have no indication of severity, (2) have no temporal dimension, (3) have a tendency to over-estimate the prevalence of problems and (4) take no account of the context of videogame use. There are also concerns about the sampling methods used (Griffiths 2008). As a consequence, the scales indicate that videogame addiction may be prevalent in a significant minority of individuals (usually adolescents) but that more research using validated survey instruments and other techniques (e.g. in-depth qualitative interviews) are required (Griffiths 2009a; King et al. 2009).

Case studies of excessive videogame players may provide better evidence of whether videogame addiction exists. There are case study accounts in the literature that show that excessive videogame players display many signs of addiction (e.g. Keepers 1990), including those that play online (e.g. Griffiths 2000; Griffiths et al. 2003, 2004a, b; Wan and Chiou 2006a, b; Allison et al. 2006; Hussain and Griffiths 2009). These case studies show that videogames are used to counteract other deficiencies and underlying problems in the person's life (e.g. relationships, lack of friends, physical appearance, disability, coping, etc.).

According to some reports, the symptoms of computer addiction are quite specific and include both psychological and physical symptoms. Psychological symptoms include: (1) having a sense of well-being or euphoria while at the computer, (2) inability to stop the activity, (3) craving more and more time at the computer, (4) neglect of family and friends, (5) feeling empty, depressed, irritable when not at the computer, (6) lying to employers and family about activities, and (7) problems with school or job. Physical symptoms include: (1) carpal tunnel syndrome, (2) dry eyes, (3) migraine headaches, (4) back aches, (5) eating irregularities, such as skipping meals, (6) failure to attend to personal hygiene, and (7) sleep disturbances, change in sleep pattern.

There has been speculation that online gaming may be more problematic and/or addictive than offline (stand alone) games (e.g. Griffiths et al. 2004a). Grüsser et al. (2007) investigated the addictive potential of online video gaming and found that one out of nine gamers fulfilled at least three diagnostic criteria of gaming addiction. Addictive signs were modelled on key symptoms of dependence syndrome outlined by the World Health Organisation and included craving, tolerance, withdrawal symptoms, loss of control, neglect of other activities, and other negative consequences. Those gamers who displayed at least three addictive signs were then compared with the remaining gamers. The "addicted" gamers predictably played for significantly longer daily periods of time. They were also significantly more likely to report withdrawal symptoms and craving. However, many gamers play excessively and display few negative consequences. The 24-h a day, never-ending online games may provide a potentially addictive medium for those with a predisposition for excessive game playing.

For over 25 years, the medical profession has voiced a number of concerns about excessive videogame playing. In the early 1980s, rheumatologists described cases of "*Pac-man's* Elbow" and "*Space Invaders'* Revenge" in which players suffered skin, joint and muscle problems from repeated button hitting and joystick pushing on the game machines (Rushton 1981; Loftus and Loftus 1983). Early research by Loftus and Loftus (1983) indicated that two-thirds of arcade videogame players examined complained of blisters, calluses, sore tendons, and numbness of fingers, hands and elbows directly as a result of their playing. There have been a whole host of case studies in the medical literature reporting some of the adverse effects of playing videogames (see Griffiths 2003a, 2005c). These have included auditory hallucinations (Spence 1993), enuresis (Schink 1991), encoprisis (Corkery 1990), wrist pain

(McCowan 1981), neck pain (Miller 1991), elbow pain (Miller 1991), tenosynovitis—also called "nintendinitis"—(Reinstein 1983; Brasington 1990; Casanova and Casanova 1991; Siegal 1991), hand-arm vibration syndrome (Cleary et al. 2002), repetitive strain injuries (Mirman and Bonian 1992), and peripheral neuropathy (Friedland and St. John 1984). Some of these adverse effects are quite rare and "treatment" simply involved termination of game playing. In the cases involving enuresis and encoprisis, the children were so engaged in the games that they did not want to go to the toilet. In these particular cases, they were simply taught how to use the game's "pause" button. It should also be noted that there have been various press reports of gamers in South East Asia dying as a result of pulmonary emboli, although such cases have yet to be reported and verified in the medical literature.

Advice, Guidance and Treatment of Videogame Addiction

To date, there have been very few empirically published accounts of videogame addiction treatment, although there are many overviews providing advice and guidance to parents and practitioners (e.g. Griffiths 2002b, 2003b, 2009b). This section overviews the available evidence from empirical and non-empirical sources.

Practical Advice and Guidance About Videogame Addiction

Griffiths (2003) advocates that parents and practitioners should begin by finding out what videogames children are actually playing. If they have objections to the content of the games, they should facilitate discussion with children about this, and if appropriate, establish some rules. Parents and practitioners should help children choose suitable, but fun games. It is important to talk about the content of the games and assure that children understand the difference between make-believe and reality. Solitary game-playing should be discouraged. Parents guard against obsessive game playing and follow recommendations on the possible risks outlined by videogame manufacturers. Lastly, parents and practitioners should ensure that children have plenty of other activities to pursue in their free time besides the playing of videogames.

Griffiths (2003) reports that parents and practitioners need to remember that in the right context, videogames can be educational, help raise a child's self-esteem, and increase their reaction times. The most commonly asked question by a parent or practitioner is 'How much videogame playing is too much?' To help answer this question, Griffiths (2003) devised a brief diagnostic checklist to assess if a child's videogame playing is getting out of hand. Does the child: (1) Play videogames almost every day? (2) Often play videogames for long periods (over 3–4 h at a time)? (3) Play videogames for excitement or 'buzz'? (4) Get restless, irritable, and moody if he/she can't play videogames? (5) Sacrifice social and sporting activities to play videogames? (6) Play videogames instead of doing his or her homework? (7) Try to cut down videogame playing but can't? If the answer is 'yes' to more than four of these questions, then the child may be playing too much. If a child is playing videogames to an unhealthy extreme, there are a number of actions parents can follow.

Parents can check the content of the games and try to give children games that are educational rather than violent. They can encourage group video game playing, which can lead to children talking and working together. Parents can set time limits on children's playing time and use video games as a reward for completing homework or chores. Parents can enforce videogame manufacturer recommendations, like sitting at least two feet from the screen, playing in a well-lit room, never having the screen at maximum brightness, and never playing videogames when feeling tired. Finally, if all else fails, parents can temporarily take away the game console and only give it back to child on a part-time basis when appropriate.

Online Support Forums

Online support services for addictive behaviour are becoming increasingly popular (see Griffiths 2005e), with some specialising in very specific addictions, such as gambling (e.g. Griffiths and Cooper 2003; Wood and Griffiths 2007). There are a variety of online forums designed by and for the use of those affected by excessive game playing. Some of these are parent run groups, whereas others are run by professional organisations. These forums commonly provide practical advice and/or experiential case accounts. Much of the advice is based on behavioural reward and punishment systems.

Most of the websites run by non-professional groups use 'videogame addiction' implicitly without ever explaining what it actually entails. They provide tips for identifying and dealing with excessive gaming in children. Some organisations advocate a collective responsibility for excessive and/or addictive gaming, (i.e. children, parents, and game companies). Others offer pragmatic advice with respect to moderating children's game playing using a behavioural paradigm with socialisation as a reward mechanism. A self-help On-Line Gamers Anonymous Organisation offers a supportive, internet-based treatment approach based heavily on the Minnesota Model system of 'the 12 Steps' used by such groups as Alcoholics Anonymous and Gamblers Anonymous.

Gaming Addiction Treatment Clinics

There is a growing need to develop treatment programmes for online computer game addiction. To date, no published studies have addressed this need although media reports have described a variety of programmes in places such as Holland and South Korea (Griffiths 2007). Some follow an abstinence treatment model and usually occur in residential settings. These programmes tend to incorporate aspects of family therapy and social skills training as part of the treatment package.

Behaviour Therapy and Cognitive Behaviour Therapy

The most effective method to deal with online addictions (including online gaming addictions) may be Cognitive Behaviour Therapy (CBT), which teaches people to identify distorted emotions, and to learn coping skills to correct them and prevent relapse (Orzack et al. 2006; Young 2007). The treatment may also be accompanied by medication. In addition, support groups may be beneficial for other people affected by an individual's online addiction (Orzack et al. 2006). CBT can identify problematic cognitions that may underlie the reason why a person uses videogames as a psychological crutch, but it may not cure addictive playing without the use of other therapeutic interventions.

For most players, recovery involves looking at the issues underlying the game habit (Orzack et al. 2006). Using a CBT approach, gamers examine the emotional motives that prompt them to play a game excessively and look for alternate ways to satisfy those needs. The goal of therapy is to get people to realise there is a psychological underpinning to their behaviour and that gamers need to take control of changing it (Orzack et al. 2006). Additional techniques include motivational interviewing to set positive goals, making contracts to specify videogame use, and the development of other recreational pursuits. By looking at the motivating psychological factors and getting clients to acknowledge and change these, long-term improvements can be made (Orzack et al. 2006). A 6-month CBT intervention on 114 Internet addicts suggested that CBT may be effective, although such studies need to be replicated using online gaming addicts rather than Internet addicts (Young 2007).

Motivational Interviewing

One therapeutic approach that has been used by some clinical psychologists is Motivational Interviewing (MI). MI borrows strategies from cognitive therapy, client centred counselling, systems theory and the social psychology of persuasion and contains elements of both directive and non-directive therapeutic approaches. Since gamers are often coerced into therapy by a third party (concerned parent or partner), the first task of a therapist is to motivate clients to change something about themselves. Miller and Rollnick (1991) are the main proponents of such an approach and advocate that MI is primarily about the motivational aspects of changing behaviour in the therapeutic setting, an area that is most salient to those people who engage in addictive behaviours. The underlying theme of such a therapeutic approach is the issue of ambivalence, and how the therapist can use MI to resolve the ambivalence and allow the client to build commitment and reach a decision to change.

Miller and Rollnick (1991) argue that motivation is not a personality problem and that there is little evidence for an addictive personality. Such assertions are integral to MI's theoretical basis. The focus for MI highlights Prochaska and DiClemente's (1982) well known six stage "wheel of change" which seeks to explain how people change. These stages consist of pre-contemplation, contemplation, determination, action, maintenance and relapse. The method employed in MI consists of using a mnemonically structured (A–H) list of eight effective motivational strategies (giving Advice, removing Barriers, providing Choice, decreasing Desirability, practising Empathy, providing Feedback, clarifying Goals and active Helping). This is intertwined with the five general principles of MI (expressing empathy, developing discrepancy, avoiding argumentation, rolling with resistance and supporting self-efficacy). Such a cognitive client centred approach does seem to hold clear possibilities in the rehabilitation of addicted gamers, but as yet there are no reported studies of utilisation in this field.

Treatment of Videogame Addiction: Empirical Case Studies

To date, there have been very few published accounts of treating videogame addiction. Kuczmierczyk et al. (1987) reported the case of an 18-year old college student who had been playing video games 3–4 h a day at an average cost of $5 a day over a 5-month period. Kuczmierczyk et al. assumed that compulsive video game playing was conceptually similar to pathological gambling and used a cognitive-behavioural modification approach in their treatment. Using a combination of self-monitoring, GSR biofeedback assisted relaxation training, in vivo exposure and response prevention; a 90% reduction of playing was observed and maintained at 6- and 12-month follow ups. In addition, the patient reported a more satisfying interpersonal life, had developed an interest in the martial arts, and was significantly less anxious and withdrawn.

The only other reported case of treating a video game addict was that of Keepers (1990). A 12-year old boy was brought by his mother for psychiatric help because he was

playing video games for 4–5 h a day at an average cost of $30–50 a day over a 6-month period. The amount of money spent was significantly beyond the boy's disposable income, and he had been stealing and truanting from school in order to play. Keepers reported that the boy was physically abused by his father (as was the mother), placed in a residential treatment centre, and participated in family therapy. During therapy the boy remained reluctant to discuss his home situation or his parents. In an effort to uncover some of his feelings, the boy was asked to design his own video game. Using video games as a vehicle for communication, the boy was gradually able to talk about the fear of his father and his feelings of helplessness. Family therapy was again undertaken with the eventual outcome of parental separation and return of the boy to his mother. At 6-month follow up, no recurrence of the boy's difficulty was noted. Keepers also considered his patient's behaviour to be reminiscent of pathological gambling.

Conclusions

Case studies and medical reports that display negative consequences of videogame playing depict individuals who use videogames to excess. From surveys in this area, there is little evidence of serious acute adverse effects on health from moderate play. Adverse effects are likely to be relatively minor and temporary, resolving spontaneously with decreased frequency of play, or to affect only a small subgroup of players. Excessive players are the most at-risk for developing health problems, although more research is needed. The need to establish the incidence and prevalence of clinically significant problems associated with videogame play is of paramount importance. Clearer operational definitions are required if this is to be achieved.

Worldwide, there are currently very few practitioners that specialise in the treatment of videogame addiction and this may be because there are so few players who are genuinely addicted to playing videogames. However, the Internet may be facilitating excessive online game playing. Since the mid-1990s, almost all of the writings on treatment of videogame addiction have focused on online videogame addiction, and it is this variant that appears to cause the most problems for users.

There are some specialist addiction treatment clinics (e.g. in Holland, China, Korea, USA) but details of the therapeutic programmes have not been published in the academic literature (Griffiths 2007). It would appear that most of the treatment clinics and individual practitioners utilise a diverse range of interventions. The programmes appear to be split into two camps—the first being a total abstinence model and the opposing camp who believe the gaming behaviour can be re-learned. In addition, there are individuals who utilise multi-modal elements but do not necessarily advocate total abstinence or moderation.

All the treatment programmes aim to increase pro-social skills through social activities and replacement of time spent on the computer with real life activities. In addition, they all provide some form of personal 'talk' therapy to address individual issues such as depression and anxiety. They also integrate management skills such as goal setting and time keeping so that players can establish control over their behaviour.

Very little empirical research is available to support most treatment programmes for excessive gaming. The cognitive-behavioural model provides the most promise as an application to video game addiction treatment. Overall, further research is required to establish the therapeutic efficacy of treatment programmes directed at excessive gaming.

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